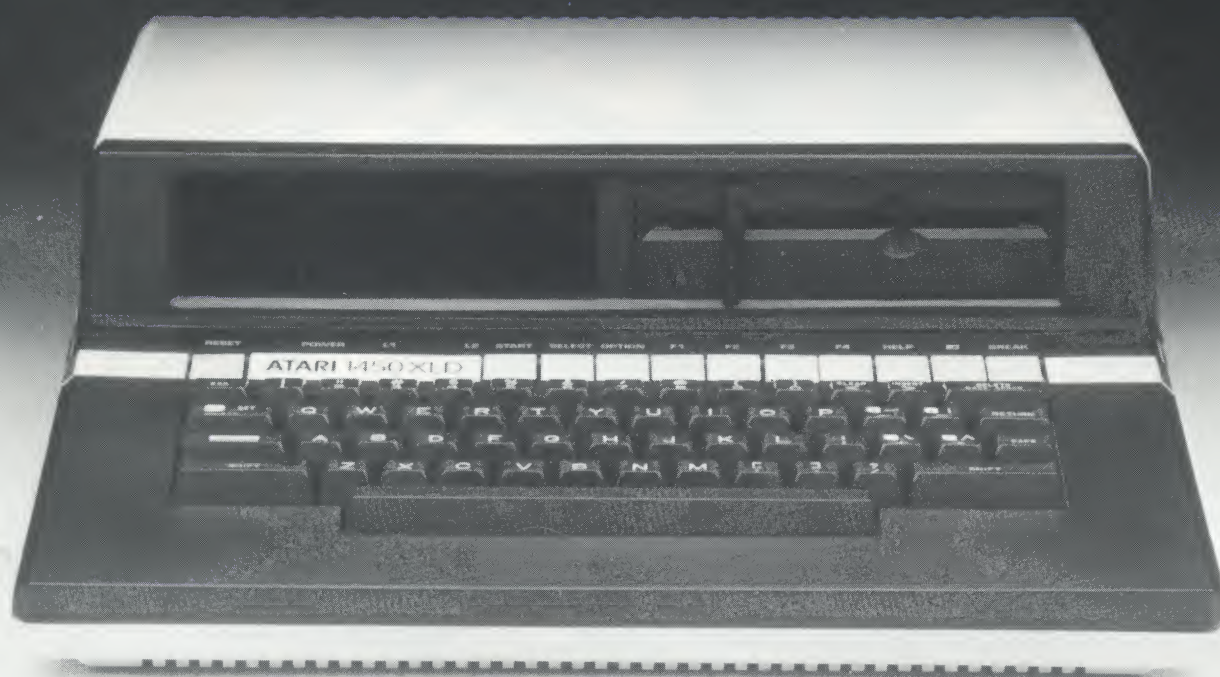


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"People For Computers"





ATARI at SUMMER CES

"XL-LENT"

by Arlan R. Levitan

While I had heard rumblings and rumors about Atari pulling out all the stops at Summer CES this year, I've got to admit that I'm still more than a bit shell-shocked. After the 1200XL fiasco at Winter CES, industry analysts had been muttering about Atari fading out of the home computer scene.

The almost unanimous negative reaction to their Winter offerings jolted Atari Marketing out of a fantasy world of undue complacency. Heads rolled in Sunnyvale. The people in Hardware development, who had been arguing for technical as well as cosmetic product evolution were brought into the decision making process.

I expected some new things to be on display at this Summer Consumer electronics Show. I picked up my Press credentials, had a cup of coffee and headed into the exhibit area. As I approached the Atari booth in McCormick Place early Sunday Morning, Hmmm....classy new pavillion with muted silvery and gray motiff...wonder what's new...

Andy Soderberg of Atari's Hardware Development Group leaned against a wall, clad in an Atari T-shirt, bleary eyed and exhausted after 48 hours with no sleep. Setup had been completed only minutes before I arrived...

Andy knew me as a vocal critic of the last show. We shook hands as he wryly smiled, and gestured over his shoulder..."Well, are you satisfied now Arlan?"

I glanced in the direction he had indicated. My jaw dropped...and I smiled...

ATARI 600XL

The 600XL is the least expensive of the

new Atari XL computer line. The unit looks a lot like a chopped 1200, but the Start, Select, Option, and System Reset keys are on the right hand side of the keyboard, along with a Help key, which in my opinion, is where they belong. The keyboard is full-stroke, and while it doesn't feel quite as good to my touch as my old 800's, has a nicer touch than other machines in it's price range.

Onboard memory is only 16K, but can be expanded to a full 64K of RAM with the addition of an Atari 48K Memory Expansion Module, which plugs into the processor bus connector on the back panel of the 600XL. The what!!!????

I said PROCESSOR BUS CONNECTOR folks! ALL of Atari's new XL units have this feature that we've only been asking for for a couple of years.

Things are changing at Atari for the better. The entire new product line is evidence that Atari has decided that listening to user groups and other serious Atari hobbyists maybe isn't such a bad idea after all.

The familiar SIO connector is still there, located on the rear panel, and will continue to be utilized for most serial I/O. Power switch is located on the back of the unit; slightly inconvenient, but who's complaining?

List price of the 600XL was announced to be \$199.95, but you can expect the competitive pricing on this item to be quite fierce. The Fall/Winter Sears catalogue has it going for \$149.95. While no price was announced for the Memory Expansion module, it should be less than \$100.

The 600XL sports a single cartridge slot located just above the keyboard. Guess what? Unlike the 1200XL, the slot will accept third party cartridges.

Aloha 1200XL! (and others)

Speaking of the 1200XL, that unfortunate spawn of pre-enlightenment Atari Marketing has been drastically reduced in price. Does \$499, down from \$899, sound like much of a drop to you? Not good enough? Heck, we might



as well offer a \$100 rebate on 'em too! None of the Atari reps would admit it, but it looks like the 1200XL has been "de-emphasized" to the point where it's as good as discontinued.

Some items have been officially dropped from the catalogue. Among them are your favorites and mine, The Atari 400 and 800 computers, and the 810 disk drive. Other stuff destined for oblivion! The 410 program recorder, and the 820, 822, and 825 printers. Contrary to rumor, the 850 Interface, while in short supply, has NOT been discontinued.

1050 Disk Drive

Don't worry about the 810 disk going to it's grave. You won't miss it much once you get your hot little hands on the new 1050 slim line drive! While the first units will be shipped this month with DOS 2.0, the single sided 1050 will have a capacity of 127K (as opposed to the 810s 88K) when used with DOS 3.0.

The new DOS will be available third quarter 1983. It is very similar in some respects to OSA+ in that it's kernel is memory resident. You don't have to load DUP.SYS to perform most DOS functions. Extensive help screens, (almost one for every prompt) will be available at the stroke of a key, and DOS 3.0 will be easily modifiable by the user to eliminate unwanted prompts. List price of the 1050 drive is \$449.95. You can expect a double-sided version sometime in 1984.

Atari 800XL

The Atari 800XL is similar in appearance to the 600XL but comes with 64K of internal memory standard and has an output for direct hook-up to a composite monitor. It's about three quarters of an inch deeper than it's little brother, and identical in all other respects. No price was announced, but reliable sources peg it to a maximum tag of \$299.95. Estimated availability! September 1983.

1030 Modem

Want to use a modem with your Atari?

How about a direct connect auto-answer, auto-dial unit with integrated software that allows you to upload and download information from disk or cassette. The 1030 modem will be available fourth quarter this year, no interface required, price to be announced.

1027 Printer

Maybe Atari felt so bad about foisting the reliable but antiquated 1025 Printer (aka Okidata Microline 80) ton us in January that they felt forced to release a real hummer. The Atari 1027 printer is a letter quality unit that prints at a respectable 20 characters per second, requires no interface, and lists at only \$349.95! They have also bundled the 1027 with a 600XL and their excellent Atariwriter software in an under \$600 package as a retort to Coleco's Adam system (covered elsewhere in this issue).

1400XL

The Atari 1400XL is a dead ringer for the 1200XL, but a look at the rear of the unit reveals an RJ11C modular jack. What for? Why, to plug into your telephone line and utilize the 1400's integral modem!

Has your spouse accused you of talking to your computer? The 1400XL can talk back! There's a built-in speech synthesizer based around a Votrax SCA-01 voice chip. The keyboard feels very good; better than the 800. And don't forget the processor bus connector in the back.

The 1400s on display were almost certainly working prototypes, and not production machines. Nonetheless, Atari swears the 1400XL will hit the stores in fourth quarter of this year. Again, no price announced, but consider \$499.95 the upper limit (Maybe even less).

If Atari had done nothing but show the 600, 800, and 1400XL, we would likely have been quite satisfied. But noooo....they just had to pull out all the stops and make those of us who are techies at heart start foaming at the mouth.



1450XLD

I WANT an Atari 1450XLD. So what if it has nice styling and all the features of the 1400XL. The reason I want it's cuz those \$\$\$!@#s from the hardware development group stuffed a double sided, half height Tandon disk drive in the case. Then they tied it directly into the internal bus so it's only about two-and-a-half times faster than an external drive. Just to tease us, they put a shielded compartment next to the drive for diskette storage that can hold an additional drive to be available as an upgrade soon after the 1450XLD is in production. Even though we'll have to wait until fourth quarter, the pain is somewhat relieved in knowing the price for the XLD will be under \$1000 (probably closer to \$800).

CP/M Module

The Sunnyvale torture & terror club (at least that's how their competitors see them) isn't through with us yet gang! Feast your eyes on this gen-yoo-wine CP/M module, with 64K of integral storage, 4 MegaHerz Z80A processor, and switch selectable forty or eighty column display for a monochrome monitor. Well sure, it will run with any Atari system, and be priced WELL under \$500...but that's not all...

1060 Expansion Chassis

Perhaps you'd be more than slightly interested in a 1060 Expansion Chassis. All it does is plug into the processor bus connector on the back of any XL system to give you two RS232c serial and one parallel port. Oh yeah...I forgot one other thing...it has eight expansion slots for little things like eighty column boards, mass RAM cards and any other stuff all the third party manufacturers who are being given complete specs will be coming out with. No price announced yet, but it makes me feel so good who cares?

Software

Software? You want software? Would terrific versions of Donkey Kong, Donkey Kong Jr., and Ms. Pacman be enough? No? Ok,

here's Pole Position, Joust, Tennis, Football, Baseball, and Robotron 2084! All in cartridge, \$44.95 each.

And what about an Atari Trackball controller with joystick and true trackball modes? Its \$60 price undercuts every other unit on the market!

Whats the matter? Don't like games eh? Maybe Microsoft Basic 2.0 on cartridge or a beautiful implementation of LOGO on cartridge will bring a smile to your lips. Atari LOGO is especially unique. The turtles LOOK like Turtles (actually they are players) and their appearance may be modified by the user. The cost? \$100 - Only about half as much as less complete versions available for other machines.

Light Pen

How about a truly fine light pen for your system? Atari has contracted with Steve Gibson of Gibson Labs for one. It is nearly identical to the unit described in Softside #40 for the Apple II. Only difference is the Atari version will be about \$100 while the Apple version is over \$300.

Other Stuff

A graphics tablet for \$80 was also on display. Far more interesting to me was a voice recognition unit for the VCS that was an absolute gas. I played a baseball game where after fielding the ball I ordered it thrown to the proper base vocally. Look for a similar unit next year for your computer. Imagine a version of Star Raiders with voice control!

The critical question is: Can all of this new equipment be brought to market on schedule? I believe it can, I believe the will to do so exists at Atari, and that it will be done.

I'm more than satisfied, Andy.

I'm impressed.

TARICON '83 CONVENTION STATUS REPORT #2

by Paul Wood
TariCon '83 Convention Chairman

Things have started to move rapidly for the convention on a number of fronts, due to lots of work by the convention committee and the many contacts and commitments our officers obtained at the recent CES Show in Chicago.

We've gotten our first ad out to the major Atari-oriented magazines and the user group press. This is the same ad you'll find on the inside back cover of this issue of the MACE Journal. We intend to follow this up with more ads citing specific events and computing personalities who will be attending.

CONVENTION PRICES

Prices for attending TariCon '83 were established at the last convention committee meeting. We feel these are very good prices for our members, especially when you consider they are for an entire weekend's worth of entertainment. The basic weekend or daily tickets will admit you to the convention exhibit hall, where you can look at and buy all the new (and old) computers, software and accessories. It will also let you view many computer demonstrations, enter a select group of seminars and make you eligible for our many door prizes. Most seminars and events, however, will cost \$1.00 each -- this is to ensure that those attending the seminars have a real interest in them and to help us with our space problems. With the size of the crowd we expect, an open ticket allowing all attendees to go to whatever event they pleased would create terrible crowding at many of the events. Attaching a minimal fee to attend most events will help solve these problems. The cost of the convention admittance tickets will be:

MACE Members Weekend Ticket - \$7.50
Pre-Registration Ticket - \$7.50
Non-member Weekend Ticket - \$10.00
Daily Ticket - \$6.00
Children 12 & Under - 50% above prices

Members of MACE families will be able to enter for the same price as MACE members. Pre-registration is being used to help us take some of the load away from the door. If we can get a lot of people registered ahead of time, there will be less confusion and shorter lines at the door. And it gives us some working capital to start the convention with. Another advantage of pre-registration is that you will be able to buy

event tickets ahead of time to ensure that you get into the events you want. At the convention meeting we did not establish a MACE member's daily price. We'll be discussing this at our next meeting at the end of June, so if you think it's necessary, let us know.

EXHIBITORS

Our brochures to prospective exhibitors and seminar sponsors is a little later than we had hoped. It will be out in about 1-2 weeks so, if you've been waiting for it, it will be on its way soon.

Atari will definitely be showing up with one of their traveling displays. I was told they would probably be only bringing their 'small' exhibit -- the one that is 'only' 20 feet by 40 feet. Sounds big enough for me.

Lots of other companies have expressed definite interest in exhibiting at the convention. Among them are some of the better-known names of manufacturers and service companies in the Atari-oriented computer field: Alien Group, Antic Magazine, CompuServe, DataSoft, Electronic Arts, First Star Software, In-Home Software, K-Byte, PerCom, Roklan Software and Synapse Software. This is a great list, but it is just the beginning -- once we get out our official brochure to everyone we'll be getting a lot more commitments.

SEMINAR SPONSORS AND PERSONALITIES

MACE is fortunate to have many, many nationally famous writers and software designers in our own ranks. We can be proud of the accomplishments of so many of our own members. Of course, we will be showcasing these people in our convention -- they will be a major draw for people out of town and will give them the recognition they deserve for the many good things they have all done for MACE in the past.

In addition, we have commitments from many other software designers from around the country who have said they will be coming to TariCon. The list of people, both MACE and non-MACE who will be here looks like this so far: Ian Chadwick, Craig Chamberlain, Mark Davids, Tom Geise, Robert Gordon, Fernando Herrera, Sheldon Leemon, Arlan Levitan, Ron Luks, Michael Reichmann, Linda Schreiber, David and Sandy Small, Jim Steinbrecker, Tony Weber, Russ Wetmore, Jerry White and Bill Williams. Quite a line-up; and this is only the start. We're in the midst of talking to many other people -- we'll give you an update in the next issue.

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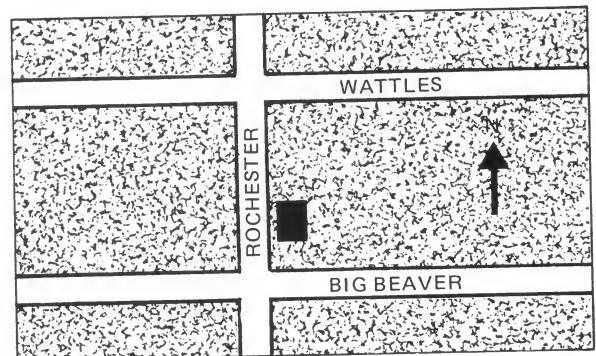
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SUMMER CES: THE WORLD BEYOND ATARI

by Sheldon Leemon

Each summer, manufacturers, distributors, and retailers who deal with consumer electronics products meet in Chicago for the largest trade show of its kind. This year, over 90,000 came to view hundreds of exhibits of the type of consumer electronics products that will be appearing in stores over the next few months. In years past, there was little space devoted to personal computers at this show. But the growth of the home computer as a mass-market consumer product has been such that this year a separate building with three floors and over 100,000 square feet of display space was needed to house the exhibits of computers and related products.

When it comes to home computers, the real story at this SCES was more computer for less money. The most dramatic evidence of this trend could be found at the Coleco booth, where they unveiled Adam, the new Coleco computer system. At the incredibly low price of \$600, the Adam system includes an 80K computer that is Colecovision game compatible, a 256K high-speed tape mass storage device, a letter-quality printer, two joystick controllers, word-processing software, and a Buck Rodgers Planet of Zoom game. Since the actual appearance of these units in stores appears to be some months away, Coleco is reluctant to reveal technical details that might help others to copy their approach. Here is what they have revealed about the various components so far:

Main unit--this includes the computer and tape drive. The computer comes with 80K(?) of memory, which can be internally expanded to 144K. The microprocessor chip was not designated, but since CP/M compatibility was advertised, it is likely that it is a Z-80 machine, or is a multi-processor design which incorporates a Z-80. There appears to be an I/O expansion bus with four expansion slots, but no details were given other than that they could be used for memory expansion, a second tape drive, and that other peripherals such as a disk drive would be available in the future. The main unit has a slot for Colecovision cartridges on the top. On the side is the mass memory tape drive. This drive uses a cassette about the size of an audio cassette, of metal tape. Each tape holds about

256K (and is possibly double sided). The transfer rate is said to be about that of a slow disk drive (like Atari's). I did get to see a 16K program loaded, and it did not seem to take any longer than from an Atari disk. Supposedly, the whole tape can be scanned from end to end in about ten seconds. While each Adam unit has one tape drive built in, there is room on the main box (which is not much larger than an Atari 800) for a second drive, which will be priced in the \$125 range.

The keyboard is nicely sculptured, stepped and color coded ala IBM, and attaches to the main unit via a coiled cord. Key placement is very similar to standard electric typewriter placement, and unlike most computer keyboards has full sized shift keys in exactly the right places. There are six special function keys along the top row, as well as special word processing keys, such as insert, delete, move, copy, store, get, clear and print. Off to the right side, there is a cluster of cursor movement keys and a home cursor key in a diamond pattern. An especially nice feature is that the standard Colecovision controller plugs into the keyboard, allowing the joystick to be used for cursor movement, and the keypad to be used as a numeric keypad.

A letter-quality printer that uses standard daisy wheels rounds out the package. It prints at only 10 characters per second, is quite noisy, and allows no special features such as subscripts or superscripts or proportional type, and from the sample, it appeared that the strike might not be quite even. Nonetheless, as part of a \$600 package, it is still quite a bargain.

Software is one area that is somewhat fuzzy. All of the Coleco games will play on the unit, and there will be advanced tape versions of their more popular titles, such as Donkey Kong. A data base package and a graphics utility package should be available from the outset. An Early Learning series is planned in conjunction with Dr. Seuss. A version of Logo designed by Dr. Papert, its inventor, is planned. In addition the built-in BASIC will accept the exact same syntax as Applesoft, so that students who use Apple computers in the classroom will be able to duplicate programs on the Adam at home. But how much of what they term their "Smartware" will be available at the outset remains to be seen.

Bear in mind that everything shown by Coleco

was an early prototype. As a matter of fact, some of their demonstrations were actually driven by other computers hidden under the table. But if Coleco can deliver most of what they say they can by the target date of November, their system will be a strong competitor despite their image as a toy company with no real experience in the computer field.

Speaking of delivering on promises, Timex-Sinclair didn't seem to be crowing quite so loudly as in the past. The promised breakthroughs in mass-storage devices, monitors and printers are now scheduled for 1984. By that time, they may not be such breakthroughs. And because of apparent production problems with the 2000 series, a new model 1500 has been introduced that is merely a redesigned T/S 1000 with 16K, a push-button keyboard, and a program cartridge slot. The T/S 1000 seems to have peaked already, and Timex's new products may not come in time to sustain its momentum.

As at the last CES, there were plenty of new entries into the home computer field shown. The Japanese were well represented, but had nothing stunning to show with which they might break into the U.S. home computer market. Spectravideo and Mattel showed second generation versions of their computers with full-stroke keyboards, although the earlier units with rubber keys are not even in the stores yet. But frankly, all of these as-of-yet unavailable computers pale before Coleco's as-of-yet unavailable computers. So much so, in fact, that Coleco's announcement killed all interest that I might have in reporting on computers like the Laser series (headed by an Apple-clone for \$600), or the Sonic with a built-in Stringy Floppy. While the Spectravideo \$600 full-stroke SV-328 might have looked real good at the last show, now it is barely worth a mention. If nothing more, Coleco has definitely taken the lead in the as-of-yet-unavailable category.

In the here-and-now category, Commodore made news in an area where it has traditionally been strong--price. The 64 was cut to under \$200 on the wholesale level, and given a new list price of \$299. After their trade-in offer runs out on June 15, there is a strong possibility that you will see these machines sold at K-Mart for about \$200. Similar cuts were made on the disk drive and color monitor, and the VIC may soon be going for about \$50. Some of the exciting peripherals Commodore

had to show at the January CES, like the speech module, the touch pad, and the piano keyboard, seemed closer to the production stage, but not quite ready. Commodore had much more software to show for the 64 this time, as it has been acquiring much from third parties (such as the Infocom series). In this area, too, Commodore has been quick to undercut the market. They have announced that their cartridge games will soon go to a retail price of \$10!! This price will apply to all cartridges, including Commodore's translations of hit arcade games such as Gorf, Wizards of Wor, Lazarian, and Blueprint, the only exception being that 16K ROM cartridges will be \$13. When this move takes effect, it may cause a panic in the software market (Maybe even Atari will have to reconsider its \$49.95 price point). Nonetheless, third parties seem to have taken to the 64 in a big way, and not only has every large maker of Atari software converted most of their lineup to the 64, but traditional Commodore sources and new faces have joined in as well, so that there was more software shown for the 64 than just about any other system.

About all that Texas Instruments had to show that was new was a version of its 99/41 computer that has a white case. The 99/2, a cheap model with a black and white display which was announced at the last CES had to be scrapped, because the 99/4A has dropped to the \$100 price level for which that machine had been planned. TI did not show the 99/8, which was expected to be their response to the long-awaited Peanut home computer which IBM may announce later this year. About all they did do of note was to publish warnings once again that their proprietary GROM chips made it impossible for third parties to make cartridges for the 99/4A without licensing their product to TI. Meanwhile, TI's losses for the second quarter of this year are projected at over \$100 million, and they are planning to cut back production of their computers from the current level of 150,000 a month. Apparently, their strategy of capturing hardware market share by slashing prices, and then monopolizing software sales through patent protection is not so successful. For a company that makes so many calculators, they have been remarkably slow to realize that 100% of nothing is still nothing. If I was Bill Cosby, I would ask for the money in cash.

In the area of software, Romox introduced a new scheme for marketing cartridges that was

quite interesting. Each participating retailer would have a combination terminal-EEPROM burner, and a number of blank cartridges for each of the various computer and videogame formats. The customer would buy a blank EEPROM cartridge for about \$15. Then he or she could choose any of the titles listed by Romox (presumably the complete range of titles from the major manufacturers would be available) and have that program burned onto the cartridge for a transfer fee, ranging from \$10-\$30. The EEPROM cartridge could be reused, though, so that if you got tired of a game, you could have it reprogrammed for only the transfer fee. Documentation would be provided in the form of a magazine, that would have descriptions and instructions for all of the titles on the system. Theoretically, such a system would solve the retailer's dilemma of too many titles competing for a limited amount of shelf space, with some titles moving faster than they can be stocked, and others not moving at all. Game designers should like the fact that it frees them from worries about production, inventory, and returns, and allows them to go to market with a product as soon as it is done, as well as being able to make updates available quickly and economically. Romox claims to have already lined up many of the major third-party producers to supply their catalog of titles, and to have commitments from mass-merchandisers such as Sears and Penneys. Nonetheless, it remains to be seen whether Romox, a company whose only claim to fame so far has been some hastily done, mediocre cartridge games, can put together a deal of this magnitude.

The major VCS software makers now appear to be ready to enter the computer market. Parker Brothers has acquired Fernando Herrera's Astro Chase, and will market it on 16K cartridge for the Atari. Likewise, they seem to have licensed the On-Line version of Frogger, so that they will be able to market that game in all computer formats as well as on the VCS. In the way of new products, they have announced Q*bert for the Atari and other systems later this fall, as well as a computer version of their board game Risk. You can bet that there will be other arcade titles too, along with their licensed Star Wars series. Unfortunately, the advance work shown at CES on computer versions for the Atari did not look as inspired as their VCS games, which are truly state-of-the-art. Imagic also had some less-than-sensational computer games to show,

including versions of their VCS fare such as Atlantis and Demon Attack. CBS games had a few interesting licensed titles such as Blueprint for the Atari, but they had little to show for all of their desperate efforts to acquire new products. That may change, as they have apparently entered into a joint venture with Epyx to produce Arcade Classics licensed from Bally/Midway. Sega is now into home computers, with Atari and VIC versions of Tac-Scan, Congo Bongo, and their new arcade Star Trek extravaganza, all of which look fairly interesting. Activision has not yet revealed any of its computer products, although it promises to have some later on this year.

Not to be outdone by the other large companies making software for multiple computer systems, Atari has started Atari Software. Like a missionary spreading the true faith to the heathen, Atari plans to bring Pac-Man to the Vic. And the Commodore 64. And the Apple. And the Color Computer. And the IBM-PC! Atari has locked up the rights to many arcade favorites (such as Joust, Robotron, Pac-Man, Pole Position, Donkey Kong, and on and on), and is planning finally to release them on other systems. They will even make cartridges for the TI without using the GROM's, despite TI's warnings that such cartridges may not work on future models (they figure that TI's installed base may never get much bigger than the million 99/4A units out there now). From what was on display, these versions appeared to be of uniform high quality. Wait til you see Defender on the Apple, or Pac-Man on the PC!

The Atari Program Exchange had their own booth this time. Prominently featured was their new packaging. They have cut out those big, clunky boxes, and have gone to a very compact vacu-formed plastic case, with distinctive cover art for each product. This should make things much easier on both retailers and customers, and may help APX penetration into more mass-market type outlets. Why, the new packaging for Instedit looked so nice that I may have to run out and buy another copy.

Celebrities from other fields are creeping into the software area. Johnny Hart, creator of BC and the Wizard of Id has entered into a joint venture with Sydney to develop video and computer games. Their first BC game, "Quest for Tires", won the Ron Luks Best Game Title of Show Award. Although now available only for Coleco, these will



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probably make their way to Atari soon. Electronic Arts, a company that bills their game developers as artists, has announced that they are working with Gahan Wilson of Addam's Family and general weirdness fame, as well as collaborating with Larry Bird and Dr. J on a realistic computer Basketball game. Since they were kind enough to kick in with review copies of M.U.L.E., Archon and Pinball Construction Set for the Atari, MACE members will probably get an in-depth review of these soon.

Of course, all of the old reliable third parties were there with their new software. First Star Software was showing off some new games in the works for Atari owners, two of which looked particularly nice. They have also announced a joint venture with Marvel Comics to develop games based on Marvel characters, as well as old Harvey characters such as Casper the Ghost. Synapse was there with their line of excellent games, showing off some really dynamic works in progress, such as Blue Max, a 3-D flying game (Maxxon, I like to call it), and Dimension X, another 3-D type. As always, you can bet that you won't see these until they are absolutely finished, and the game values perfected. Synapse also unveiled a new business line, complete with word-processor and spreadsheet to go along with yet another revamp of Filemanager. And they have spread out into the VIC and C-64 markets as well.

Datamost had an enormously expensive display, including scantily clad models and Captain Sticky, of Real People fame. They should have used the money to buy some software. About the only thing I saw of interest was that they did a Caverns of Mars ripoff for the Apple called Cavern Creatures. In all fairness, though, they did have one outstanding utility called Paint Wizard. Author Mark Riley put into this package all of the second-generation features you would have liked to have seen in Micro Painter, and then some. You might want to look for it sometime next month.

Datasoft announced that instead of the long-awaited TextWizard II, they were going with WordWizard, a brand new AtariWriter clone, with added features. Does this mean that they aren't going to upgrade the old TextWizard owners for a nominal fee, as promised? Also, they announced a new bargain line of software under the Gentry label. From what I saw, their description of these products as games that did not quite meet the

usual quality standards of Datasoft products about summed things up. Well, I guess that low-priced ripoffs of arcade games like Frogger is a step in the right direction considering the current practice in the marketplace of selling such software at high prices.

Roklan announced some original game products. Although their translation work has in the past been excellent, none of their original work was very exciting. The same goes for Sirius, Broderbund, and many other of the old standby companies--good stuff, but not great.

If there is any conclusion to be drawn from the Summer CES, it is that the home computer industry remains a fast growing and extremely volatile one. The combination of price cutting and a growing number of entrants into an already crowded field could lead to a big shake-out in the near future. Perhaps the most interesting aspect of the Winter CES in January will be seeing how many of this summers exhibitors will still be around.

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ALPHABET SORTS FOR ATARI

By RICHARD "STRING" GIZYNSKI

As I read through December 1982 Compute, I noticed an article on sort routines. Beginners can often follow a number sort but stumble badly when it comes to translating sorts that handle strings. With this in mind, I started the following program as a translation and tutorial. I added a random DATA statement reader and a timer routine to see how long the different sorts take.

This program is an easy way to compare four different sorting routines and how long each routine takes to sort out an identical list of words. It asks you for the number of words to be sorted. You can adjust how many characters the longest word will have by changing the statement (CHAR=) on line 90. The comparisons aren't completely accurate since the FOR-NEXT routines and GOTO's used by BASIC run slower as they are placed further back in the program.

Lines 10 to 200 initialize the program. String MAIN\$ is the string to be sorted. RESERVE\$ carries the original list of words to each sort to keep the comparisons as fair as possible. CARRY\$, CARRYHIGH\$ and CHECKER\$ are used later as 'holding tanks' for segments of MAIN\$ that are to be moved.

Lines 200 to 250 are used to pick a random list of test words. Line 210 gets a random number from 1 to 100. The RESTORE statement in line 220 sets an internal pointer to a line number chosen by the random number generated in line 210. You can make a list of 100 words of your own if you wish. Start your list at line number 6000. Put a line number followed by DATA then the word with 1-6 characters. Each following line number should be 10 higher, 6000, 6010 ... etc. Line 230 READs the DATA statement at the RESTORED line and line 240 adds the word to the string RESERVE\$.

Lines 260 through 360 finish up initializing the program and find out if you have a printer so that you can have a permanent copy of the results.

Lines 370 through 410 set up the conditions

for each sort. Line 370 loads MAIN\$ with the same word list and picks up the name of the routine to be used. Lines 380 and 390 give you a visual reference of which sort is in progress and line 400 resets the ATARI clock used as a timer. After the sort is completed, line 410 reads the clock and goes to a print routine so you can check the accuracy of the sort. Lines 420-570 activate each sort and tabulate and print the results.

Bubble sorts are the easiest to understand. Lines 1010-1020 set up controls for the sort and line 1030-1040 describe which letter of string MAIN\$ starts the first word of the pair to be examined. Line 1050 compares two words next to each other and bypasses the switch routine if they are in the correct order. If they are not in sequence, they are switched by lines 1060-1080. Line 1090-1100 change a variable SW that is used to detect that a switch has been made and LIMIT carries the information of where the last switch occurred so that later string searches won't have to check portions of the string that are OK. Line 1110 loops the routine back to check what is now the second of the two words with the next word. The effect is that the 'largest' word will be bubbled toward the end of the string. If any switches have been made, the line 1120 GOTO loops the subroutine back for another pass through the string.

The shell sort is faster but more complex. The idea is to compare word that are farther apart so that major changes in position can occur quickly. At first, a word from the front end of the string will be compared to a word in the second half of the string, then in following passes, the gap will be narrowed. If the second of the two words is moved forward, the routine will check it against words still closer to the front end of the string. Checking and movement of words takes place in layers or shells, bypassing the words between those being checked.

Here's how it's done. Lines 2010-2020 initialize a distance between words to greater than the size of the string. Line 2030 cuts this distance (and all future passes through the string) in half and detects the end of the sort when there is no more gap between the words to be checked. Lines 2040-2060 define which

characters of the string MAIN\$ start the two words to be compared. Line 2070 compares the two words and jumps past the switch routine if they are in the correct position relative to each other.

If they need to be switched, lines 2080-2100 do the switching. Line 2110 and 2120 check to see if the gap between words is small enough to check the newly switched word with words closer to the front end of the string, and if so, sets up a second layer or 'shell' of checking. Larger words leapfrog toward the front of the string. When the second shell is finished, line 2130 loops back for another set of comparisons. After the larger shell, with its wide between-word gap, is completely checked, Line 2140 sends the routine back to line 2030 where the gap is cut in half and the process starts over again.

The CSORT is easier to follow. The main idea of this sort is to find the largest word in the string and switch it with the word at the end. Line 3010 tells the routine where the last word to be checked is. Lines 3020-3030 pick up the first word and it's position in the string. Line 3040 starts a loop through the string and 3050 compares the two words. If the word being carried is the largest, the routine GOTO's line 1080 to complete the loop. If the word being 'checked' is larger, lines 3060-3070 pick this word and the checking word and note it's position in the string. When the entire string has been check for the largest word, lines 3090-3120 switch this word with the word at the end and move the 'end' up one notch. Line 3130 checks to see that the 'end' is more than one word down and restarts the process.

The DSORT does much the same as the CSORT, only it works on both ends of the string at the same time. Line 4010 initializes the string to the first and last word of the string. lines 4020-4050 put the current front end and back end word into temporary checking strings and note their positions. Line 4060 starts a FOR-NEXT loop that will count through the parts of the string to be checked. Line 4080 checks for the 'largest word'. If the word in CARRYHIGH\$ is the largest, it bypasses a routine that switches the two. If the word in MAIN\$ is the largest, line 4090 puts the word into the string that checks for 'large' words and

changes the marker IMAX that notes where the larger word is. Lines 4100-4120 do the same thing for the 'small' word. Line 4140 ends the checking loop and, after the last checking loop, makes shure that the middle words are not improperly switched. Lines 4170-4250 move the largest and smallest words toward the ends of the string and close down the area to be checked durring the next set of checking loops. Line 4260 recycles the routine if the ends of the string have not met in the middle.

Lines 5000-5120 print the results to the screen (or printer if you have one). They were added so you could check the accuracy of the sort. The time is given in seconds. Lines 6000 and up hold the list of words used to make up the checking strings. After you have the program de-buged, run it several times with different lengths of word lists. The results are very interesting.

```

10 REM SAVE "D:DIFSORTS.30
20 REM BY RICHARD GIZYNSKI
30 REM
40 REM INITIALIZING THE PROGRAM
50 GRAPHICS 0:?"HOW MANY WORDS DO YOU WANT TO SORT"
60 INPUT NUMBER
70 REM
80 REM NUMBER OF LETTERS IN EACH WORD
90 CHAR=7:SIZE=CHAR*NUMBER+1
100 DIM A$(1),MAIN$(SIZE)
110 DIM RESERVE$(SIZE)
120 DIM CARRY$(CHAR)
130 DIM CARRYHIGH$(CHAR)
140 DIM CHECKER$(CHAR)
150 DIM NAME$(49),SORT$(12)
160 DIM TIME(4)
170 RESERVE$(1)=" ":RESERVE$(SIZE)=" "
180 RESERVE$(2,SIZE)=RESERVE$
190 NAME$=RESERVE$
200 FOR I=1 TO NUMBER
210 A=INT(RND(0)*100+1)
220 RESTORE A*10+6000
230 READ CARRY$
240 RESERVE$(I*CHAR-CHAR+1)=CARRY$
250 NEXT I
260 NAME$="BUBBLE SORT"
270 NAME$(13)="SHELL SORT"
280 NAME$(25)="CSORT"
290 NAME$(37)="DSORT"
300 NAME$(49)=" "
310 RESERVE$(SIZE)=" "
```



```

320 PR=0:?? ? "DO YOU HAVE A PRINTER"
330 INPUT A$:TRAP 320
340 IF A$="Y" THEN PR=1:GOTO 360
350 IF A$<>"N" THEN 320
360 TRAP 50000:GOTO 420
370 MAIN$=RESERVE$:SORT$=NAME$(SORT*12+1)
380 ? SORT$
390 IF PR THEN LPRINT :LPRINT SORT$
400 POKE 18,0:POKE 19,0:POKE 20,0:RETURN
410 T1=PEEK(20):T2=PEEK(19):T3=PEEK(18):GOTO 5010
420 ? "SORT TIME TEST OF ";NUMBER;" ITEMS"
430 IF PR THEN LPRINT :LPRINT :LPRINT :LPRINT "SORT TIME
TEST OF ";NUMBER;" ITEMS"
440 SORT=0:GOSUB 370:GOSUB 1000:GOSUB 410
450 SORT=1:GOSUB 370:GOSUB 2000:GOSUB 410
460 SORT=2:GOSUB 370:GOSUB 3000:GOSUB 410
470 SORT=3:GOSUB 370:GOSUB 4000:GOSUB 410
480 REM PRINT OUT RESULTS
490 ? "TABULATED COMPARISON OF ";NUMBER;" ITEMS"
500 IF PR THEN LPRINT :LPRINT "TABULATED COMPARISON OF
";NUMBER;" ITEMS"
510 FOR I=0 TO 3
520 SORT$=NAME$(I*12+1)
530 ? "TIME FOR ";SORT$;TIME(I)
540 IF PR THEN LPRINT "TIME FOR ";SORT$;TIME(I)
550 NEXT I
560 IF PR THEN LPRINT :LPRINT :LPRINT
570 END
1000 REM BUBBLE SORT
1010 LIMIT=NUMBER-1
1020 SW=0
1030 FOR I=1 TO LIMIT
1040 FRONT=I*7-6:BACK=FRONT+7
1050 IF MAIN$(FRONT,FRONT+6)<=MAIN$(BACK,BACK+6) THEN
1110
1060 CARRY$=MAIN$(FRONT,FRONT+6)
1070 MAIN$(FRONT,FRONT+6)=MAIN$(BACK,BACK+6)
1080 MAIN$(BACK,BACK+6)=CARRY$
1090 SW=1
1100 LIMIT=I
1110 NEXT I
1120 IF SW=1 THEN 1020
1130 RETURN
2000 REM BASIC SHELL SORT
2010 SPREAD=1
2020 SPREAD=2*SPREAD:IF SPREAD<=NUMBER THEN 2020
2030 SPREAD=INT(SPREAD/2):IF SPREAD=0 THEN RETURN
2040 FOR I=1 TO NUMBER-SPREAD
2050 FRONT=I
2060 TAIL=FRONT+SPREAD
2070 IF MAIN$(FRONT*7-6,FRONT*7)<=MAIN$(TAIL*7-6,TAIL*7)
THEN 2130
2080 CARRY$=MAIN$(FRONT*7-6,FRONT*7)
2090 MAIN$(FRONT*7-6,FRONT*7)=MAIN$(TAIL*7-6,TAIL*7)
2100 MAIN$(TAIL*7-6,TAIL*7)=CARRY$
2110 FRONT=FRONT-SPREAD
2120 IF FRONT>0 THEN 2060
2130 NEXT I
2140 GOTO 2030
3000 REM BASIC SORT C

```

```

3010 LIMIT=NUMBER
3020 CHECKER$=MAIN$(1,7)
3030 LARGEST=1
3040 FOR I=2 TO LIMIT
3050 IF MAIN$(I*7-6,I*7)<CHECKER$ THEN 3080
3060 CHECKER$=MAIN$(I*7-6,I*7)
3070 LARGEST=I
3080 NEXT I
3090 CARRY$=MAIN$(LIMIT*7-6,LIMIT*7)
3100 MAIN$(LIMIT*7-6,LIMIT*7)=MAIN$(LARGEST*7-6,LARGEST*7)
3110 MAIN$(LARGEST*7-6,LARGEST*7)=CARRY$
3120 LIMIT=LIMIT-1
3130 IF LIMIT>1 THEN 3020
3140 RETURN
4000 REM SORT D
4010 FIRST=1:LAST=NUMBER
4020 CARRY$=MAIN$(FIRST*7-6,FIRST*7)
4030 IMIN=FIRST
4040 CARRYHIGH$=CARRY$
4050 IMAX=FIRST
4060 FOR I=FIRST TO LAST
4070 REM CHECK FOR HI STRING
4080 IF MAIN$(I*7-6,I*7)<=CARRYHIGH$ THEN 4110
4090 CARRYHIGH$=MAIN$(I*7-6,I*7):IMAX=I
4100 REM CHECK FOR LO STRING
4110 IF MAIN$(I*7-6,I*7)>=CARRY$ THEN 4130
4120 CARRY$=MAIN$(I*7-6,I*7):IMIN=I
4130 REM
4140 NEXT I:IF IMIN<>LAST THEN 4170
4150 IMIN=IMAX
4160 REM MOVE HIGHEST STRING TO BACK
4170 CARRYHIGH$=MAIN$(LAST*7-6,LAST*7)
4180 MAIN$(LAST*7-6,LAST*7)=MAIN$(IMAX*7-6,IMAX*7)
4190 MAIN$(IMAX*7-6,IMAX*7)=CARRYHIGH$
4200 LAST=LAST-1
4210 REM MOVE LOWEST STRING TO FRONT
4220 CARRY$=MAIN$(FIRST*7-6,FIRST*7)
4230 MAIN$(FIRST*7-6,FIRST*7)=MAIN$(IMIN*7-6,IMIN*7)
4240 MAIN$(IMIN*7-6,IMIN*7)=CARRY$
4250 FIRST=FIRST+1
4260 IF LAST>FIRST THEN 4020
4270 RETURN
5000 REM PRINT OUT
5010 TIME=T1+256*T2+256*256*T3:TIME=INT(TIME/6+5)/10
5020 LINESIZE=INT(37/CHAR)*CHAR
5030 FOR I=0 TO INT(LEN(MAIN$)/LINESIZE)-1
5040 ? MAIN$(I*LINESIZE+1,I*LINESIZE+LINESIZE)
5050 IF PR THEN LPRINT MAIN$(I*LINESIZE+1,I*LINESIZE+LINESIZE)
5060 NEXT I
5070 ? MAIN$(I*LINESIZE+1)
5080 IF PR THEN LPRINT MAIN$(I*LINESIZE+1)
5090 ? "TIME ";TIME;" SECONDS "
5100 IF PR THEN LPRINT "TIME ";TIME;" SECONDS "
5110 TIME(SORT)=TIME
5120 RETURN

```

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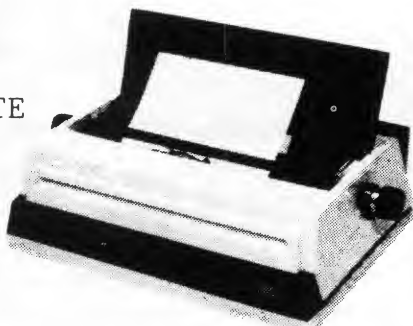
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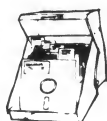
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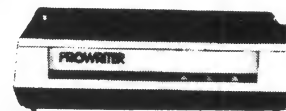
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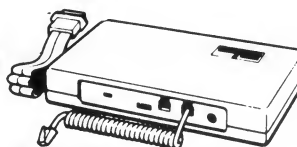


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Assembler Language SIG

By Phil Heavin, Secretary, SIGASM

May Meeting

This month's meeting was attended by fewer people than usual so we were able to have more informal discussion than normal. This was beneficial to us all so I hope we see more of this in future meetings.

We spent some time in discussing sound effects and how to generate them. Tom Hunt presented a BASIC program that he wrote to explore the sounds on the ATARI and also some of the effects he was able to generate for a typical arcade game.

Tom also demonstrated how he was able to interface his new printer through joystick

ports 3 and 4. This involved his hardware interface and a modified printer driver to support this hardware. Even though this may sound more like hardware to you, please note that with assembler language you are always dealing directly with some piece of hardware whether it is the 6502, ANTIC, POKEY or the PIA as Tom did for his printer interface.

Because our group was so small we skipped the election of new officers that was scheduled for this meeting. Hopefully you will be seeing a new name on this column next month.

July's Meeting

July's meeting will be Thursday, the 7th at the my home in Sterling Heights. You can contact me at 39-6213. The meeting will begin at 7:00 with socializing and free form discussion with the actual business portion starting at 7:30. We hope to see you there.

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0 REM *****
1 REM ***   ACE NEWSLETTER   ***
2 REM ***   3662 VINE MAPLE DR   ***
3 REM ***   EUGENE, OR 97405   ***
5 REM *****
6 REM *****
7 REM *** OLD McDONALD, a game for***
8 REM ***   children   ***
9 REM ***   by   ***
10 REM **   Stan Ockers   ***
11 REM **   Lockport, IL   ***
12 REM **   May, 1983   ***
13 REM *****

```

OLD McDONALD

by Stan Ockers
Reprinted from A.C.E.

```

100 GOSUB 2080:GOSUB 650
110 OPEN #1,4,0,"K:":DLY=3:LIM=5:GOSUB 1830
120 GRAPHICS 0:?"INITIALIZING"? "TAKES 15 SECONDS"
130 DIM X1(8),Y1(8),X2(8),Y2(8),A1(8),A2(8),A$(5),F1$(40),F2$(40),B$(17):B$(1)=" ":B$(17)=" ":B$(2)=B$
140 RESTORE 150:FOR J=0 TO 8:READ A,B,C,D:X1(J)=A:Y1(J)=B:X2(J)=C:Y2(J)=D:NEXT J
150 DATA 3,6,22,6,8,6,27,6,13,6,32,6,5,9,24,9,12,9,31,9,4,12,23,12,10,12,29,12,6,15,25,15,12,15,31,15
160 F1$(1)="k.m":F1$(39)="M":F1$(4)=F1$:F2$(1)="l.n":F2$(39)="N":F2$(4)=F2$
170 DIM F3$(17),B1(8),B2(8):F3$="xxxjopjjopjjopjj"
180 GOSUB 1010:GOSUB 1290:POKE 16,112:POKE 53774,112
190 SMILY=0:FROWN=0:?"CHR$(125):SOUND 2,0,0,0:SOUND 3,0,0,0
200 POSITION 0,3:?"F1$":POSITION 0,4:?"F2$":POSITION 0,18:?"F1$":POSITION 0,19:?"F2$
210 FOR J=5 TO 17:POSITION 1,J:?"F3$(J,J)":POSITION 20,J:?"F3$(J,J)":POSITION 38,J:?"F3$(J,J)":NEXT J
220 ANIMAL=INT(RND(0)*7)+1:NUM=INT(RND(0)*(LIM-1))+2:ANIMAL2=ANIMAL+1:IF ANIMAL2=8 THEN ANIMAL2=1
230 IF LOCN=0 THEN FOR J=0 TO 8:A1(J)=J:A2(J)=J:NEXT J
240 IF LOCN=1 THEN GOSUB 1350
250 IF TYPE=0 THEN ANIMAL2=ANIMAL
260 GOSUB 1570:GOSUB 1580
270 POSITION 2,20:?"#6;"
280 IF TASK<0 THEN 390
290 REM * MATCH GROUPS *
300 GOSUB 1700
310 GOSUB 610:FOR J=0 TO R-1:GOSUB 1430:NEXT J
320 GRP=-1
330 GOSUB 1580:GRP=GRP+1:IF GRP>LIM-2 THEN GOSUB 1650:GOTO 220
340 FOR J=0 TO B1(GRP)-1:GOSUB 1400:NEXT J:N=B1(GRP):GOSUB 1550
350 MAXTIME=60*DLY:GOSUB 1520:GOSUB 1590
360 IF TIMEUP=1 THEN 330
370 IF B1(GRP)<R THEN GOSUB 1650:GOTO 220
380 GOSUB 1770:GOTO 220
390 IF TASK<1 THEN 490
400 REM * COUNT ANIMALS *
410 FOR J=0 TO NUM-1:GOSUB 1430:NEXT J
420 CNT=0:MAXTIME=60*DLY:GOSUB 1520
430 GOSUB 1590:IF TIMEUP=0 THEN 460
440 J=CNT:GOSUB 1400:GOSUB 1530:CNT=CNT+1:N=CNT:GOSUB 1550:GOSUB 1520
450 IF CNT<NUM OR CNT=NUM THEN 430
460 IF CNT=NUM THEN GOSUB 1770:GOTO 220
470 GOSUB 1650:GOTO 220
480 REM * MATCH PATTERNS *
490 NUM=LIM:GOSUB 1350:GOSUB 1730:RAND=INT(RND(0)*(LIM-1))+2:ANIMAL=RAND
500 FOR J=0 TO LIM-1:ANIMAL=ANIMAL+1:IF ANIMAL>7 THEN ANIMAL=1

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510 GOSUB 1430:NEXT J
520 SEQN=-1:FOR J=0 TO 8:A2(J)=A1(J):NEXT J
530 GOSUB 1580:SEQN=SEQN+1:IF SEQN>LIM THEN GOSUB 1650:GOTO 220
540 ANIMAL2=B1(SEQN):FOR J=0 TO LIM-1:ANIMAL2=ANIMAL2+1:IF ANIMAL2>7 THEN ANIMAL2=1
550 GOSUB 1400:NEXT J
560 MAXTIME=60*DLY:GOSUB 1520:GOSUB 1590
570 IF TIMEUP=1 THEN 530
580 IF B1(SEQN)◇RAND THEN GOSUB 1650:GOTO 220
590 GOSUB 1770:GOTO 220
600 REM * RANDOM #, 2 TO LIM *
610 R=INT(RND(0)*(LIM-1)+2):RETURN
620 REM * RANDOM #, 1 TO LIM *
630 R=INT(RND(0)*LIM+1):RETURN
640 REM * VBI ROUTINE *
650 DIM VBI$(128):RESTORE 660:FOR J=1 TO 128:READ A:VBI$(J,J)=CHR$(A):NEXT J
660 DATA 162,3,189,128,6,240,115,222,132,6,48,39,189,132,6,205,160,6,176,102,189,152,6,240,97,189,148,6
670 DATA 41,240,29,152,6,72,134,205,138,10,170,104,157,1,210,166,205,222,152,6,24,144,71,189,136,6,133,203
680 DATA 189,140,6,133,204,189,148,6,133,206,188,144,6,134,205,138,10,170,177,203,240,32,157,0,210,165,206
690 DATA 157,1,210,166,205,200,177,203,240,23,157,132,6,200,152,157,144,6,189,156,6,157,152,6,24,144,12
700 DATA 157,0,210,24,144,223,157,144,6,222,128,6,202,16,133,76,98,228
710 REM * INSERT VBI ROUTINE *
720 RESTORE 740:FOR J=1536 TO 1545:READ A:POKE J,A:NEXT J
730 VBI=ADR(VBI$):HI=INT(VBI/256):LO=VBI-256*HI:POKE 1538,LO:POKE 1540,HI
740 DATA 104,160,0,162,0,169,7,76,92,228
750 REM * SOUND STRINGS *
760 DIM SND1$(110):RESTORE 770:FOR J=1 TO 110:READ A:SND1$(J,J)=CHR$(A):NEXT J
770 DATA 81,20,81,20,81,20,108,20,96,20,96,20,108,40,64,20,64,20,72,20,72,20,81,60,108,20,81,20,81,20,81,20
780 DATA 108,20,96,20,96,20,108,40,64,20,64,20,72,20,72,20,81,60,108,20,81,20,81,20,81,20,108,20,81,20,81,20
790 DATA 81,20,108,20,81,20,108,20,81,20,108,20,81,20,81,20,96,20,108,20,81,20,81,20,81,20,108,20,96,20,96,20
800 DATA 108,40,64,20,64,20,72,20,72,20,81,60,0,0
810 DIM SND2$(98):RESTORE 820:FOR J=1 TO 98:READ A:SND2$(J,J)=CHR$(A):NEXT J
820 DATA 128,20,128,20,128,40,121,20,121,20,128,40,108,20,108,20,121,20,121,20,128,60,0,20
830 DATA 128,20,128,20,128,40,121,20,121,20,128,40,108,20,108,20,121,20,121,20,128,60,0,20,128,20,128,20,128,20
840 DATA 0,20,128,20,128,20,128,20,0,20,128,40,128,40,128,20,128,20,121,40,128,20,128,20,128,40,121,20,121,20
850 DATA 128,40,108,20,108,20,121,20,121,20,128,60,0,0
860 DIM SND3$(16):RESTORE 870:FOR J=1 TO 16:READ A:SND3$(J,J)=CHR$(A):NEXT J
870 DATA 96,20,81,20,72,20,81,20,96,20,81,20,60,60,0,0
880 DIM SND4$(16):RESTORE 890:FOR J=1 TO 16:READ A:SND4$(J,J)=CHR$(A):NEXT J
890 DATA 102,20,108,20,102,20,121,20,162,20,128,20,121,60,0,0
900 REM * PAGE 6 INIT. *
910 RESTORE 920:FOR J=1664 TO 1696:READ A:POKE J,A:NEXT J
920 DATA 1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,170,170,170,170,10,10,10,10,10,10,10,10,0
930 POKE 1696,15
940 HI=INT(ADR(SND1$)/256):POKE 1676,HI:LO=ADR(SND1$)-256*HI:POKE 1672,LO
950 HI=INT(ADR(SND2$)/256):POKE 1677,HI:LO=ADR(SND2$)-256*HI:POKE 1673,LO
960 HI=INT(ADR(SND3$)/256):POKE 1678,HI:LO=ADR(SND3$)-256*HI:POKE 1674,LO
970 HI=INT(ADR(SND4$)/256):POKE 1679,HI:LO=ADR(SND4$)-256*HI:POKE 1675,LO
980 A=USR(1536)
990 RETURN
1000 REM * Change character set *
1010 DIM MCS$(42):RESTORE 1020:FOR J=1 TO 42:READ A:MCS$(J,J)=CHR$(A):NEXT J
1020 DATA 104,169,0,133,203,133,205,169,224,133,204,165,106,56,233,5,133,106,24
1030 DATA 105,1,133,206,162,4,160,0,177,203,145,205,200,208,249,230,204,230,206,202,208,242,96
1040 A=USR(ADR(MCS$)):CSPAGE=PEEK(106)+1:CS=256*CSPAGE:GRAPHICS 0:POKE 756,CSPAGE

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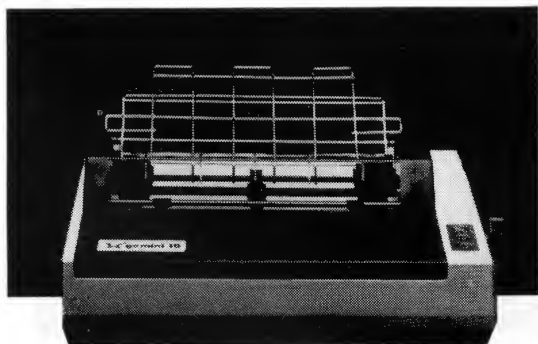
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1050 RESTORE 1080:FOR J=CS+208 TO CS+511:READ A:POKE J,A:NEXT J
1060 RESTORE 1210:FOR J=CS+776 TO CS+927:READ A:POKE J,A:NEXT J
1070 RETURN
1080 DATA 0,165,41,10,2,0,0,0,0,85,85,85,149,170,195,243,2,66,106,104,160,128,0,192
1090 DATA 160,47,160,0,0,0,0,0,21,165,165,133,134,134,134,0,85,85,85,169,170,166,170
1100 DATA 0,90,90,90,86,86,86,85,253,21,145,149,147,159,175,169,127,84,68,84,196,244,240,96
1110 DATA 138,138,138,72,72,8,8,8,90,85,85,85,68,192,192,192,165,170,106,0,0,0,0,0
1120 DATA 90,90,154,19,19,19,19,19,32,152,152,152,152,152,168,42,8,38,38,38,38,38,168
1130 DATA 162,162,171,43,62,61,60,255,138,138,234,233,189,125,60,255,8,42,234,251,127,95,15,63
1140 DATA 64,16,21,17,81,87,5,61,4,16,80,16,20,84,64,240,0,0,0,0,48,12,3
1150 DATA 63,63,63,58,58,50,48,240,240,244,245,185,186,186,48,60,3,3,67,87,85,165,5,85
1160 DATA 0,0,0,0,2,9,25,38,0,0,0,170,106,153,157,111,0,0,0,128,96,152,153,102
1170 DATA 38,41,41,10,2,0,0,3,110,157,174,110,191,191,192,192,102,154,154,104,160,128,192,240
1180 DATA 0,0,0,255,40,40,248,56,0,0,0,0,0,5,21,84,9,42,43,10,0,0,0,0
1190 DATA 90,248,255,168,12,60,0,0,137,42,170,170,170,42,58,58,90,106,169,165,169,170,3,3
1200 DATA 138,168,162,106,170,170,160,160,0,0,0,160,160,128,0,0
1210 DATA 0,0,1,6,26,27,107,107,0,85,170,170,170,235,235,235,0,0,64,144,164,228,233,233
1220 DATA 106,106,27,26,6,1,0,0,170,170,170,235,190,170,85,0,169,169,228,164,144,64,0,0
1230 DATA 255,255,63,60,15,3,0,0,255,195,60,255,255,255,255,0,255,255,252,60,240,192,0,0
1240 DATA 60,60,60,60,60,60,60,60,60
1250 DATA 12,56,40,40,235,235,235,40,40,235,235,235,40,40,40,40,0,0,0,0,255,255,255,0
1260 DATA 0,255,255,255,0,0,0,0,60,60,60,60,60,60,149,149,149,170,60,60,60,60,60,60
1270 DATA 0,0,3,15,63,63,252,252,0,255,255,255,255,60,60,60,0,0,192,240,252,252,63,63
1280 REM * CHANGE DISPLAY LIST *
1290 DL=PEEK(560)+PEEK(561)*256:POKE DL+3,68:FOR J=6 TO 24:POKE DL+J,4:NEXT J:POKE DL+25,7:POKE DL+26,6
1300 POKE DL+27,6:FOR J=29 TO 32:POKE DL+J-1,PEEK(DL+J)
1310 RESTORE 1320:FOR J=708 TO 712:READ A:POKE J,A:NEXT J
1320 DATA 72,62,52,78,58
1330 POKE 752,1:RETURN
1340 REM * SCRAMBLE ANIMAL POS. *
1350 FOR J=0 TO 8
1360 R=INT(RND(0)*9):FOR K=0 TO J-1:IF A1(K)=R THEN 1360
1370 NEXT K:A1(J)=R:A2(J)=A1(J)+ANIMAL:IF A2(J)>8 THEN A2(J)=A2(J)-9
1380 NEXT J:RETURN
1390 REM * PRINT ANIMAL ON RIGHT *
1400 RESTORE 1440+10*ANIMAL2:READ A$:POSITION X2(A2(J)),Y2(A2(J)):A$:
1410 READ A$:POSITION X2(A2(J)),Y2(A2(J))+1:A$:RETURN
1420 REM * PRINT ANIMAL ON LEFT *
1430 RESTORE 1440+10*ANIMAL:READ A$:POSITION X1(A1(J)),Y1(A1(J)):A$:
1440 READ A$:POSITION X1(A1(J)),Y1(A1(J))+1:A$:RETURN
1450 DATA , ,;<=, ,
1460 DATA >?B,CDEF ,
1470 DATA GH,IJK,
1480 DATA LMN,OPQ,
1490 DATA RST,UVW,
1500 DATA XY,ZI,
1510 DATA ,\J^_,
1520 POKE 764,255:POKE 18,0:POKE 19,0:POKE 20,0:RETURN
1530 TIME=PEEK(20)+256*PEEK(19):IF TIME>MAXTIME THEN MAXTIME=TIME
1540 RETURN
1550 P=2*N:FOR J=15 TO 0 STEP -0.6:POSITION P,20: #6:CHR$(N+144):POSITION P,20
1560 ? #6;" ":SOUND 3,40,10,J:NEXT J:POSITION P,20: #6:N:RETURN
1570 FOR J=5 TO 17:POSITION 2,J: B$;:NEXT J:RETURN
1580 FOR J=5 TO 17:POSITION 21,J: B$;:NEXT J:RETURN

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1590 TIMEUP=0:POKE 764,255
1600 TIME=PEEK(20)+256*PEEK(19):IF TIME>MAXTIME THEN TIMEUP=1:RETURN
1610 IF PEEK(53279)=3 THEN POP:GOSUB 1830:GRAPHICS 0:GOSUB 1290:POKE 756,CSPACE:GOTO 190
1620 IF PEEK(764)=255 AND STRIG(0)=1 THEN 1600
1630 RETURN
1640 REM * FROMN *
1650 POKE 1667,1
1660 P=4*(8-FROMN)+2:POSITION P,1:? #6;"qrs":POSITION P,2:? #6;"ghi":FROMN=FROMN+1:IF FROMN=9 THEN 190
1670 IF SMILY+FROMN>9 THEN SMILY=SMILY-1
1680 RETURN
1690 REM * SCRAMBLE ARRAY *
1700 FOR J=0 TO LIM-2
1710 GOSUB 610:FOR K=0 TO J-1:IF B1(K)=R THEN 1710
1720 NEXT K:B1(J)=R:NEXT J:RETURN
1730 FOR J=0 TO LIM-1
1740 GOSUB 630:FOR K=0 TO J-1:IF B1(K)=R THEN 1740
1750 NEXT K:B1(J)=R:NEXT J:RETURN
1760 REM * SMILY *
1770 POKE 1666,1
1780 P=4*SMILY+2:POSITION P,1:? #6;"abc":POSITION P,2:? #6;"def":SMILY=SMILY+1
1790 IF SMILY=9 THEN FOR J=1 TO 400:NEXT J:POKE 1664,1:POKE 1665,1:GOTO 190
1800 IF SMILY+FROMN>9 THEN FROMN=FROMN-1
1810 RETURN
1820 REM * MENU *
1830 GRAPHICS 17:POSITION 3,3:? #6;"SETUP CONDITIONS":POSITION 3,5:? #6;"choose #"
1840 POSITION 1,8:? #6;"(1) locations":POSITION 4,9:IF LOCN=0 THEN ? #6;" ORDERED"
1850 IF LOCN=1 THEN ? #6;" RANDOM"
1860 POSITION 1,11:? #6;"(2) animals":POSITION 4,12:IF TYPE=0 THEN ? #6;" SAME"
1870 IF TYPE=1 THEN ? #6;" DIFFERENT"
1880 POSITION 1,14:? #6;"(3) task":POSITION 4,15:IF TASK=0 THEN ? #6;" MATCH GROUPS"
1890 IF TASK=1 THEN ? #6;" COUNT ANIMALS"
1900 IF TASK=2 THEN ? #6;" MATCH PATTERN"
1910 POSITION 1,17:? #6;"(4) dly time ":DLY:POSITION 1,19:? #6;"(5) # limit ":LIM
1920 POSITION 1,21:? #6;"(6) start pgrn"
1930 GET #1,A:IF A<49 OR A>54 THEN 1920
1940 IF A=54 THEN RETURN
1950 GOSUB 1950+10*(A-48):GOTO 1830
1960 LOCN=ABS(LOCN-1):RETURN
1970 TYPE=ABS(TYPE-1):RETURN
1980 ? #6;CHR$(125):POSITION 3,6:? #6;"choose a task":POSITION 1,8:? #6;"(1) MATCH GROUPS"
1982 POSITION 1,10:? #6;"(2) COUNT ANIMALS":POSITION 1,12
1984 ? #6;"(3) MATCH PATTERN":GET #1,A:IF A<49 OR A>51 THEN 1980
1986 TASK=A-49:RETURN
1990 ? #6;CHR$(125):POSITION 3,6:? #6;"ENTER DELAY":POSITION 3,8:? #6;"TIME (SEC)":POSITION 3,10:? #6;"(1-9)";
1992 GET #1,DLY:DLY=DLY-48:IF DLY<1 OR DLY>9 THEN 2020
1994 RETURN
2000 ? #6;CHR$(125):POSITION 3,6:? #6;"ENTER MAX.":POSITION 3,8:? #6;"NUMBER OF":POSITION 3,10:? #6;"ANIMALS (3-9)"
2010 GET #1,LIM:LIM=LIM-48:IF LIM<2 OR LIM>9 THEN 2050
2020 RETURN
2030 GET #1,DLY:DLY=DLY-48:IF DLY<1 OR DLY>9 THEN 2020
2040 RETURN
2050 ? #6;CHR$(125):POSITION 3,6:? #6;"ENTER MAX.":POSITION 3,8:? #6;"NUMBER OF":POSITION 3,10:? #6;"ANIMALS (3-9)"
2060 GET #1,LIM:LIM=LIM-48:IF LIM<3 OR LIM>9 THEN 2050
2070 RETURN
2080 GRAPHICS 18:RESTORE 2090:FOR J=1 TO 12:READ X,Y,A:POSITION X,Y:? #6;CHR$(A):NEXT J:RETURN
2090 DATA 7,3,111,9,2,76,11,3,196,1,8,205,3,7,65,5,8,99,8,8,228,10,7,239,12,8,110,14,7,193,16,8,236,18,9,68

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A	BANNER80.PTR	PRINTER UTILITY	UTIL	7	BASIC	010
A	CDXFER.BAS	BOOTS TAPE TO DISK	UTIL	10	BASIC	019
A	CDXFER.OBJ	OBJ FOR CDXFER.BAS	UTIL	10	OBJ	002
A	CDXFER.SRC	SRC CODE--CDXFER.BAS	UTIL	10	SRC	022
A	CDXFER.TXT	TXT FOR CDXFER.BAS	UTIL	10	BASIC	015
A	DATAFER	TRANSFER DATA FILES	UTIL	10	BASIC	061
A	DIR	DISK DIRECTORY	UTIL	6	BASIC	005
A	ERRSUB.LST	ERROR TRAPPING DEMO	UTIL	7	BASIC	026
A	ERRSUB.USE	USED WITH ERRSUB.LST	UTIL	NA	BASIC	020
A	FILEREAD	FILES SHOULD BE LISTED	UTIL	9	BASIC	015
A	GRAPHIT	GRAPH ON ATARI	UTIL	6	BASIC	015
A	LIBRARY	FIND YOUR BOOKS	UTIL	8	BASIC	030
A	MAILLIST	BUY SOME LABLES	UTIL	8	BASIC	016
A	MEMDUMP	READ MEMORY LOCATIONS	UTIL	10	BASIC	040
A	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	010
A	MENU.GIL	MENU WITH DOS FUNCTION	UTIL	9	BASIC	028
A	MENU2	ANOTHER MENU	UTIL	9	BASIC	023
A	MENU3	ANOTHER MENU	UTIL	9	BASIC	011
A	MODEM	NEED INTERFACE	UTIL	6	BASIC	015
A	PMDA.BAS	PM DESIGN AID	UTIL	10	BASIC	069
A	PRETYLST.PTR	PRINTER UTILITY	UTIL	7	BASIC	020
A	STRNGCRE	MEMORY LOCATIONS	UTIL	6	BASIC	018
A	VREM.LST	REMOVE VARIABLES	UTIL	5	BASIC	005

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DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
B	ART3D	GRAPHICS AND SOUND	DEMO	5	BASIC	028
B	ATARI800	DRAWS ATARI 800	DEMO	10	BASIC	079
B	BOX	VIDEO GRAPHICS	DEMO	6	BASIC	004
B	BOXNSQRS	VIDEO AND SOUND	DEMO	5	BASIC	010
B	CHARDEMO	GR.0, 1, 2 CHARACTERS	DEMO	5	BASIC	011
B	CIRCLE	VIDEO GR.7	DEMO	4	BASIC	003
B	CIRCLES2	VIDEO DISPLAY	DEMO	5	BASIC	010
B	CLOCK1	CLOCK AT TOP OF SCREEN	PRG AID	7	BASIC	008
B	COLBURST	RANDOM VIDEO GR.7	DEMO	4	BASIC	005
B	COLORS.BAS	FULL COLOR SPECTRUM	DEMO	10	BASIC	019
B	DEMOECHU	D/L & VIDEO	DEMO	8	BASIC	010
B	FASTSTIK	FAST JOYSTICK DISPLAY	DEMO	7	BASIC	004
B	FLASH	COLOR AND SOUND	DEMO	4	BASIC	002
B	GOBLUE	MICHIGAN LOVERS	DEMO	8	BASIC	016
B	GROUCHO.PTR	GRAPHICS ON PRINTER	DEMO	7	BASIC	011
B	GRPHMODE	ALL MODES-COLOR-SOUND	DEMO	8	BASIC	019
B	HELLO	DISPLAY LIST & SCROLL	PRG AID	8	BASIC	002
B	HORSE	HORSE RUNNING WITH SO.	DEMO	10	BASIC	023
B	IRMODES	IR MODES 4 & 5	PRG AID	8	BASIC	018
B	MENU	DISK DIR. WITH LOAD/GO	UTIL	9	BASIC	010
B	MOIRE	VIDEO GR.8	DEMO	6	BASIC	004
B	PALLETTE	GR.8 VIDEO	DEMO	4	BASIC	005
B	PMTEACH	TEACHES PM GRAPHICS	PRG AID	10	BASIC	072
B	POETRY	POEMS	EDUCA.	6	BASIC	039
B	PRETTY	VIDEO DISPLAY	DEMO	6	BASIC	024
B	RECTANG	ONE LINER	DEMO	6	BASIC	002
B	RESTORE	NEEDS INSTRUCTIONS	PRG AID	4	BASIC	055
B	ROUND	VIDEO GR.7	DEMO	5	BASIC	002
B	SHAPES	ONE LINER GR.7	DEMO	4	BASIC	002
B	SPEED	COMPARES BASIC TO ML	DEMO	9	BASIC	008
B	SPIRGRPH	GRAPHICS DEMO	DEMO	8	BASIC	016
B	STRMANIP	STRING MANIPULATIONS	PRG AID	6	BASIC	005
B	SUNSET.BAS	GREAT COLOR DISPLAY	DEMO	10	BASIC	030
B	SUPRCUBE	GRAPHICS AND COLORS	DEMO	8	BASIC	015
B	VICTORS	RUNS WITH GO BLUE	DEMO	8	BASIC	009
B	VIDGFT1	VIDEO GRAFFITI	DEMO	5	BASIC	018

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DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
C	FUNCTION	TEACHES MATH	EDUCA.	10	BASIC	097
C	GEOQUIZ	THE COMPUTER KNOWS!!!	EDUCA.	10	BASIC	091
C	HANGMAN	SEVEN CHOICES TO PLAY	GAME	9	BASIC	031
C	HANGQUOT	QUOTATIONS--HANGMAN	GAME	10	BASIC	064
C	MENU	DISK DIR.--LOAD/GO	UTIL	9	BASIC	010
C	MULT	LEARN TO MULTIPLY	EDUCA.	8	BASIC	015
C	PREMATH	GREAT FOR PRESCHOOL	EDUCA.	10	BASIC	065
C	SLIDE	NEEDS INSTRUCTIONS	NA	0	BASIC	078
C	SPEDREAD	LEARN TO READ FAST	EDUCA.	9	BASIC	043
C	TYPING	LEARN TO TYPE	EDUCA.	10	BASIC	049
C	WORLDCAP	GREAT LEARNING TOOL	EDUCA.	10	BASIC	050

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D	GUESSNUM	WORK WITH MATH	EDUCA.	9	BASIC	068
D	MENU	DISK DIR--LOAD/GO	UTIL	9	BASIC	010
D	MORSE	MORSE CODE	EDUCA.	10	BASIC	102
D	MULTIPLY	DOWN TO BASICS	EDUCA.	10	BASIC	070
D	MYRIPEDE	GREAT!! GREAT!! GREAT!	GAME	10+	OBJ	107
D	REMAINDR	MATH QUIZ	STRAT.	7	BASIC	085

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E	CANNNDUEL	SHOOT YOUR ENEMY	GAME	9	BASIC	037
E	CIVILWAR	CIVIL WAR SIMULATION	STRAT.	10	BASIC	063
E	GOMOKO	FIVE IN ROW WINS	GAME	7	BASIC	035
E	GUNNER	HIT MOVING TARGETS	GAME	7	BASIC	046
E	HAMURABI	RULE SUMERIA	STRAT.	7	BASIC	038
E	MEELBORN.BAS	CARD GAME	GAME	9	BASIC	082
E	MENU	DISK DIR. LOAD/GO	UTIL	9	BASIC	010
E	MOO	GUESS MY NUMBER	GAME	4	BASIC	017
E	NIM	DON'T BE LAST	STRAT.	6	BASIC	016
E	POLITICS	ELECTION TIME	STRAT.	4	BASIC	056
E	PRICE	THE PRICE IS RIGHT	GAME	8	BASIC	039
E	SIMON	GOOD FOR PRESCHOOL	GAME	8	BASIC	015
E	SUMER	RULE A KINGDOM	STRAT.	7	BASIC	120
E	TREASURE	FIND THE TREASURE	GAME	8	BASIC	032

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DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
F	BLACKJAC.K	JUST LIKE VEGAS	GAME	10	BASIC	047
F	COMPIII	GUESS NUMBERS	STRAT.	4	BASIC	049
F	ELIZA	TALK TO ELIZA	STRAT.	9	BASIC	076
F	HEXPZLE	HARD BUT GOOD	GAME	9	BASIC	029
F	MAZEMOD1	REVISED MAZERIDE	GAME	10	BASIC	111
F	MAZERIDE	FIND YOUR WAY OUT	GAME	10	BASIC	048
F	MENU	DISK DIR. LOAD/GO	UTIL	9	BASIC	010
F	QUESTER	ADVENTURE TYPE GAME	STRAT.	10	BASIC	090
F	RUNWAY	LAND A PLANE	GAME	3	BASIC	052
F	SEARCH	YOU ARE LOST	STRAT.	4	BASIC	088

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DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
G	BLOCKADE	PLAY A FRIEND	GAME	9	BASIC	089
G	DARTS	THROW A DART	GAME	9	BASIC	036
G	ENEMY	KILL ONCOMING OBJECTS	GAME	8	BASIC	017
G	FLYSAUCR	SHOOT FLYING SAUCERS	GAME	9	BASIC	039
G	FROGS	FROGS JUMP	DEMO	4	BASIC	014
G	KBOT	YOU ARE BEING CHASED	GAME	9	BASIC	034
G	MENU	LIST PROGRAMS	UTIL	8	BASIC	010
G	PADLBALL	PADDLE TENNIS	GAME	8	BASIC	030
G	PINBALL	GOOD IDEA BUT SLOW	GAME	5	BASIC	031
G	ROUNDUP	BUILD WALLS OR DIE	GAME	9	BASIC	047
G	SAUCLAUN	GREAT MOVEMENT	GAME	9	BASIC	054
G	SHOOT.EXE	DOS BINARY LOAD	GAME	10	OBJ	010
G	SHOOTEXE.INS	LOADING INSTRUCTIONS	INFO	NA	BASIC	001
G	SUB	DESTROY A SUBMARINE	GAME	8	BASIC	034
G	TARGETS	SHOOT MOVING TARGETS	GAME	8	BASIC	031

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DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
H	BIORHYTM	OUTPUT BY MONTH AND YR	GAME	8	BASIC	059
H	BIRTHDAY	KEEPS TRACK BY MONTH	UTIL	8	BASIC	016
H	BIRTHDAY.1	DATA FILE FOR BIRTHDAY	UTIL	NA	BASIC	001
H	CALORIES	WEIGHT WATCHERS DELGHT	UTIL	7	BASIC	051
H	COMPLAY	PM GRAPHICS	DEMO	1	BASIC	015
H	CSEARCH	USE JOYSTK TO SET COLR	PRG AID	8	BASIC	010
H	DEGREEGR	PLOTS GRAPHICS	DEMO	7	BASIC	008
H	DIAGONAL	RUN AFTER STIKREAD	PRG AID	6	BASIC	017
H	DRC	GO TO THE RACES	GAME	4	BASIC	038
H	FINANCE	BUDGET MANAGER	UTIL	10	BASIC	105
H	FLWRPOT.DMO	SLOW	DEMO	2	BASIC	009
H	GRAVITY	JOYSTICK BUTTON CONTRL	GAME	7	BASIC	035
H	GUNFIGHT	TEST REACTION TIME	GAME	5	BASIC	016
H	JOGGER.2	COMPARES BASIC TO ML	PRG AID	6	BASIC	016
H	MENU	LIST PROG. & SECTORS	UTIL	8	BASIC	015
H	MULT	TEACHES MULTIPLICATION	EDUC	10	BASIC	015
H	OCEAN	FROM ATARI REF MANUAL	DEMO	8	BASIC	011
H	OCTCOMPU	COMPARES BASIC TO ML	PRG AID	6	BASIC	014
H	PLAYER	PM GRAPHICS	PRG AID	5	BASIC	008
H	POKE710.712	SHOWS POKES TO COLORS	PRG AID	8	BASIC	006
H	REENTRY	GUIDE SPACESHIP	GAME	2	BASIC	030
H	SCROLL.GR2	TITLE DISPLAY	PRG AID	5	BASIC	005
H	SETCOLOR.GR0	ALL COLOR SETTING GR0	PRG AID	8	BASIC	007
H	SETCOLOR.GR2	ALL COLOR SETTINGS GR2	PRG AID	10	BASIC	010
H	SOUNDTES.T	SOUND EFFECTS	PRG AID	7	BASIC	008
H	SSEARCH	USE JOYSTK TO SET SO.	PRG AID	8	BASIC	016
H	STIKREAD	MACH CODE FOR DIAGONAL	PRG AID	6	B/OBJ	005
H	SUNSET	SHOWS ATARI COLORS	DEMO	10	BASIC	026
H	USFLAG	DISPLAYS US FLAG	DEMO	8	BASIC	013

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DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
I	BATS	BATS FLYING IN CAVES	GAME	10	BASIC	070
I	BUDGET.MGR	KEEP TRACK OF \$\$\$\$	UTIL	10	BASIC	060
I	CONCENTR	VERY HARD TO SOLVE	GAME	9	BASIC	053
I	CONCNTRT.ION	VERY GOOD GRAPHICS	GAME	10	BASIC	058
I	COPY	COPY TAPE DATA TO DISK	UTIL	10	BASIC	010
I	CRC1980.AM1	USE WITH ADV MUSIC SYS	DEMO	10	BASIC	103
I	DICESIM	ROLL THE DICE	GAME	9	BASIC	007
I	DOODLE16	DRAW ON YOUR SCREEN	DEMO	9	BASIC	004
I	G10	GRAPHICS TEN DEMO	DEMO	9	BASIC	003
I	G11	GRAPHICS 11 DEMO	DEMO	9	BASIC	002
I	G9	GRAPHICS NINE DEMO	DEMO	10	BASIC	003
I	GTIA256	256 COLORS AT ONCE	DEMO	9	BASIC	008
I	GTIADEMO	ONE OF THE BEST GTIA'S	DEMO	10	BASIC	038
I	GTIADLI.ASM	ASM FILE FOR GTIA	DEMO	9	ASM	018
I	GTIADLI.BAS	BASIC FILE FOR GTIA	DEMO	9	BASIC	005
I	GTIADLI.SRC	SRC CODE FOR GTIA	DEMO	9	SRC	011
I	KAL8	SHOWN AT MACE PARTY	DEMO	9	BASIC	006
I	LAUREL.PTR	PICTURE OF LAUREL	DEMO	9	BASIC	038
I	MENU	LIST PROG. LOAD/GO	UTIL	9	BASIC	009
I	POKE.GR2	POKE COLORS TO SCREEN	PRG AID	8	BASIC	010
I	SPEECH	NOUNS, VERBS, ETC.	EDUC	9	BASIC	043
I	SPEECH.DAT	DATA FILE FOR SPEECH	EDUC	9	BASIC	031

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DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
J	ACTUAL.ELE	COMPUTES ELEC BILL	UTIL	9	BASIC	104
J	ACTUAL.GAS	COMPUTES GAS BILL	UTIL	9	BASIC	116
J	ELE	CALCULATES ELEC. BILL	UTIL	9	BASIC	086
J	GAS	CALCULATES GAS BILL	UTIL	9	BASIC	096
J	MENU	DISK MENU LOAD/GO	UTIL	9	BASIC	024
J	TEL	CALCULATES TELEPHONE	UTIL	9	BASIC	094
J	TITLE	TITLE PAGE FOR PROGRAM	UTIL	9	BASIC	003
J	TOTAL	PROJECTS NEXT MO TOTAL	UTIL	9	BASIC	034
J	TOTAL.ELE	FILES FOR ELECTRIC	UTIL	9	BASIC	001
J	TOTAL.GAS	FILES FOR GAS UTIL	UTIL	9	BASIC	001
J	TOTAL.TEL	FILES FOR TELEPHONE	UTIL	9	BASIC	001
J	TOTAL.WAT	FILES FOR WATER	UTIL	9	BASIC	001
J	UTILITY	PROGRAM MENU	UTIL	9	BASIC	013
J	WAT	CALCULATES WATER BILL	UTIL	9	BASIC	074

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DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
K	ATOB	ASM TO BASIC	UTIL	10	BASIC	059
K	ATOB.DOC	INSTRUCTIONS	UTIL	NA	BASIC	126
K	CHAINPTR	DOS 'C' FUNCTION	UTIL	NA	BASIC	038
K	DATAFER	CASSETTE FILES TO DISK	UTIL	10	BASIC	061
K	DATAFER.CAS	DISK FILES TO CASSETTE	UTIL	10	BASIC	038
K	INFO.MAR	USE DOS 'C' FUNCTION	INFO	NA	BASIC	001
K	INFO.P1	INSTRUCTIONS	UTIL	NA	BASIC	003
K	INFO.P2	INSTRUCTIONS	INFO	NA	BASIC	006
K	INFO.P3	INSTRUCTIONS	UTIL	NA	BASIC	006
K	INFO.P4	INSTRUCTIONS	UTIL	NA	BASIC	005
K	INFO.P5	INSTRUCTIONS	UTIL	NA	BASIC	005
K	INFO.P6	INSTRUCTIONS	UTIL	NA	BASIC	004
K	INFO.P7	INSTRUCTIONS	UTIL	NA	BASIC	005
K	INFO.P8	INSTRUCTIONS	UTIL	NA	BASIC	005
K	INFO.P9	INSTRUCTIONS	UTIL	NA	BASIC	004
K	INTRODUC.TIN	INSTRUCTIONS	INFO	NA	BASIC	009
K	LIBRARYI.NFO	INSTRUCTIONS	UTIL	NA	BASIC	009
K	MENU	MENU-MOVING CURSOR	UTIL	9	BASIC	016
K	MENUCHAN	RUNS PAGES 1,2,3	UTIL	NA	BASIC	010
K	MENUINFO.MAR	INSTRUCTIONS	UTIL	NA	BASIC	001
K	MENUINFO.P1	INSTRUCTIONS	UTIL	NA	BASIC	004
K	MENUINFO.P2	INSTRUCTIONS	UTIL	NA	BASIC	005
K	MENUINFO.P3	INSTRUCTIONS	UTIL	NA	BASIC	002
K	PLAYBACK	3 VARIATIONS OF SIMON	GAME	10	BASIC	053
K	PLAYBACK.DOC	INSTRUCTIONS	GAME	NA	BASIC	051

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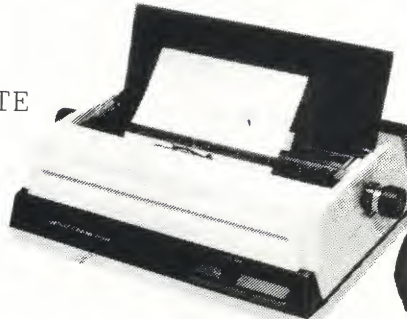
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